# UNITED STATES PATENT AND TRADEMARK OFFICE

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/042,528 | 10/18/2001 | Andrew William Mackie | 2639/A36 | 7291 |

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| EXAMINER |
|---|
| JACKSON, JAKIEDA R |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2626 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

| | **Application No.** | **Applicant(s)** |
| | 10/042,528 | MACKIE, ANDREW WILLIAM |
| *Office Action Summary* | **Examiner** | **Art Unit** | |
| | Jakieda R. Jackson | 2626 | |

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☒ Responsive to communication(s) filed on <u>02 November 2007</u>.

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) <u>1-9 and 11-15</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☒ Claim(s) <u>3-9 and 11-13</u> is/are allowed.

6) ☒ Claim(s) <u>1-2 and 14-15</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All  b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

## DETAILED ACTION

### Continued Examination Under 37 CFR 1.114

1.     A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection.  Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114.  Applicant's submission filed on

November 2, 2007 as been entered.

### Response to Arguments

2.     Applicants argue that neither Carcus not Shapiro discloses or suggest combining

a probability that characters preceding each breakpoint end a word and a probability

that characters following the breakpoint start a word to assign weights to the

breakpoints in the natural-language input.  Applicant's arguments are persuasive, but

are moot in view of new grounds of rejections.

### Claim Rejections - 35 USC § 103

3.     The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.      **Claims 1-2 and 14-15** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Carcus et al. (USPN 6,035,268) hereinafter referenced as Carcus in

view of Shapiro et al. (PGPUB 2003/0014405), hereinafter referenced as Shapiro and in

further view of Matsubayashi et al. (USPN 6,473,754), hereinafter referenced as

Matsubayashi.

Regarding **claim 1**, Carcus discloses a method for segmenting compound words

in an unrestricted natural-language input, the method comprising:

receiving a natural-language input (natural language) consisting of a plurality of

characters (receiving stream of input text; compound word; column 1, line 19 –column

7, line 18);

constructing a set of probabilistic breakpoints in the natural-language input based

on probabilistic breakpoint analysis (statistical analysis; column 1, line 19 –column 7,

line 18);

identifying a plurality of linkable components by traversal of substrings of the

natural-language (natural language) input delimited by the set of probabilistic

breakpoints (word breaks) wherein a linkable component (link) is identified by locating

the component in a lexicon (lexicon; column 1, line 19 –column 7, line 18); and

returning a segmented string consisting of a plurality of linkable components

spanning (spanning) the natural-language input, wherein the segmented string is

interpreted as a compound word (compound word; column 1, line 19 –column 7, line

18), but does not specifically teach assigning weights to the breakpoints in the natural-

language input and traversing substrings of the natural-language input in an order

determined by the weights assigned to the breakpoints and combining a probability.

Shapiro discloses a method wherein assigning weights (computing the weights)

to the breakpoints in the natural-language input (parsing the query) and traversing

subsrings of the natural-language input in an order (creating an ordered list of terms by

sorting their terms in order of their computed weights) determined by the weights

assigned to the breakpoints (column 1, paragraphs 0010-0011 and column 2, paragraph

0023), to improve quality.

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to modify Carcus' method wherein it is described as

above, to tell the user which words are considered the most important in the search

(column 1, paragraph 0011).

Carcus in view Shapiro discloses a method of segmenting compound words, but

does not specifically teach combining a probability that characters preceding each

breakpoint end a word and a probability that characters following the breakpoint start a

word to assign weights to the breakpoints in the natural-language input.

Matsubayashi discloses a method of combining a probability that characters

preceding each breakpoint (probability of division) end a word (tail-position) and a

probability that characters following the breakpoint start a word (head-position) to assign

weights to the breakpoints in the natural-language input (column 3, line 41 – column 4,

line 41 and column 15, lines 47-56 and column 16, line 65 - column 17, line10 with

column 20, lines 27-53), to extract characteristic string with less erroneous division.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Carcus in view of Shapiro's method wherein it combines a probability, as taught by Matsubayashi, to extract characteristic string with less erroneous division and this less search noise to realize searching of a relevant document or documents with less shift from the main concept of a seed document (column 5, lines 26-35).

Regarding **claim 2**, Carcus discloses a method further including the step of analyzing a chart of the linkable components in the case that the segmented string cannot be constructed and returning an unsegmented string interpretable as a partial analysis of a compound word (removed from the word breaker; column 1, line 19 – column 7, line 18 and column 36-54).

Regarding **claim 14**, it is interpreted and rejected for the same reasons as set for h in claim 1. In addition, Carcus discloses a method wherein assigning weights comprises combining weights of contexts of one length that precede a breakpoint and of contexts of a different length that follow the breakpoint (inherent in parsing; column 1, paragraphs 0010-0011 and column 2, paragraph 0023).

Regarding **claim 15**, it is interpreted and rejected for the same reasons as set forth in claim 1. In addition, Carcus discloses a method wherein assigning weights comprises weighting weights of a plurality of context of different lengths that precede and follow a breakpoint (inherent in parsing; column 1, paragraphs 0010-0011 and column 2, paragraph 0023).

### *Allowable Subject Matter*

5.      Claims 3-9 and 11-13 are allowed.

The following is a statement of reasons for allowance:

As for independent claim 3, it recites an apparatus for segmenting compound words in a natural-language input. Prior art such as Franz show a similar configuration but fails to teach the recited configuration wherein a probabilistic breakpoint analyzer is coupled to the startpoint probability matrix, the endpoint probability matrix and the natural-language input, the probabilistic breakpoint analyzer being operative to generate a breakpoint-annotated input from the natural-language input.

Dependent claims 4-9 are allowed because they further limit their parent claims.

As for independent claim 11, it recites an apparatus for segmenting compound words in an unrestricted natural-language input. Prior art such as Carcus, Shapiro and Matsubayashi show a similar method but fails to teach the recited method of combining weights of trigraph context that precede and follow each breakpoint to assign a weight to the breakpoint in the natural-language input in combination with the other limitations.

As for independent claim 12, it recites an apparatus for segmenting compound words in an unrestricted natural-language input. Prior art such as Carcus, Shapiro and Matsubayashi show a similar method but fails to teach the recited method of combining weights of bigraph context that precede and follow each breakpoint to assign a weight to the breakpoint in the natural-language input in combination with the other limitations.

As for independent claim 13, it recites an apparatus for segmenting compound words in an unrestricted natural-language input. Prior art such as Carcus, Shapiro and

Matsubayashi show a similar method but fails to teach the recited method of combining

weights of tetragraph context that precede and follow each breakpoint to assign a

weight to the breakpoint in the natural-language input in combination with the other

limitations.

### Conclusion

6.      Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jakieda R. Jackson whose telephone number is 571-

272-7619. The examiner can normally be reached on Monday-Friday from 5:30am-

2:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JRJ
November 21, 2007